

CLAIMS

1. Method for arranging a thermoplastic insert unit comprising a body in a thermoplastic sandwich product having at least one planar or virtually planar section, which sandwich product comprises a layer of a thermoplastic core material which is not completely solid and at least one covering layer formed from a fibre-reinforced thermoplastic,
5 the method comprising the steps of forming a hole in the covering layer of the thermoplastic sandwich product, with core material being removed;
10 placing the plastic insert unit in the hole; positioning the insert unit between a horn and an anvil of an ultrasonic apparatus;
15 applying ultrasonic energy and pressure, so that heat is generated between the plastic insert unit and the covering layer of the thermoplastic sandwich product; fixing the insert unit through cooling after sufficient heat has been supplied to allow fusion
20 between the plastic insert unit and the covering layer of the thermoplastic sandwich product.
2. Method according to Claim 1, in which the sandwich product comprises a top covering layer formed from a fibre-reinforced thermoplastic, a core layer formed from a thermoplastic and a bottom covering layer formed from a fibre-reinforced thermoplastic.
25 3. Method according to Claim 1 or 2, in which the insert unit formed from the thermoplastic comprises a body and a flange.
4. Method according to one of the preceding claims, in which the dimensions of the hole are substantially equal to the dimensions of the body of the insert unit.
30 5. Method according to one of the preceding claims, in which the dimensions of the plastic insert unit are selected to be such that application of ultrasonic energy and pressure effects simultaneous fusion of the underside of the plastic insert unit to the top side of the bottom covering layer and the underside of the flange of the insert unit to the top side of the top covering layer of the thermoplastic sandwich product.
35 6. Method according to one of the preceding claims, in which the cross section of the hole is divided into at least two parts in the (top) covering layer.

7. Method according to one of the preceding claims, in which no core material is removed.
- 5 8. Method according to one of the preceding claims, also comprising a step of forming a recess in a surface of the thermoplastic sandwich product before a plastic insert unit is placed in the recess.
- 10 9. Method according to Claim 8, in which the recess is applied using the hot/warm deformation method.
- 10 10. Method according to Claim 8 or 9, in which the recess in the top covering layer of the thermoplastic sandwich product is reinforced with a fibre-reinforced thermoplastic layer.
- 15 11. Method according to one of the preceding claims, in which the application of heat produces a cavity around a hole in a thermoplastic sandwich product, after which the cavity is filled with thermosetting resin.